Jurnal Pendidikan Vokasi
Volume 15, No. 1, 2025, pp. 126-135
Online: https://journal.uny.ac.id/index.php/jpv

Managing soft skills development in vocational higher education: A case study of institutional practices in Indonesia

Syukri Fathudin Achmad Widodo [1] *, Sudji Munadi [1], Chrisna Tri Harjanto [1], Tri Adi Prasetya [1], Betania Kartika Muflih [2]
[1] Universitas Sultan Ageng Tirtayasa, Indonesia
[2] International Islamic University Malaysia, Malaysia
* Corresponding Author. Email: sanam.officially@gmail.com

ARTICLE INFO

Article History
Received:
29 May 2024;
Revised:
19 September 2025;
Accepted:
10 November 2025;

Keywords
Development;
Employability;
Learning strategies;
Soft skills

ABSTRACT

This study aims to evaluate the appropriateness of implementing P5 at SMKN 5 in Tangerang District from the perspectives of context, input, process, and product. The study's findings inform SMKN 5 and other schools that wish to implement P5. The study's participants comprise 91 P5 students who completed a questionnaire, three students who participated in interviews, nine teachers, and three interview informants. This study employs the CIPP (context, input, process, product) evaluation method, a mixed-methods approach with a sequential explanatory design. Data were collected through questionnaires, documentation, interviews, and observations, and analyzed using descriptive statistics. The findings show that: 1) the context is appropriate based on the interviews and observations; 2) the input appropriateness is scored 4.28 (86%) by teachers and 3.81 (76%) by students; 3) the process appropriateness is scored 4.37 (87%) by teachers and 4.16 (83%) by students; 4) the product appropriateness is scored 4.42 (88%) by teachers and 4.27 (85%) by the students; 5) the overall appropriateness is scored 4.36 (87%) by teachers and 4.08 (82%) by students. The evaluation results indicate that the implementation of P5 at SMKN 5 in Tangerang District is considered appropriate. The recommendations include updating the P5 guidelines, developing a holistic evaluation and an interactive teaching method, matching P5 projects to students' competence levels, and enhancing communication with stakeholders.

INTRODUCTION

The Industrial Revolution 4.0 has brought about significant changes in the world of work, potentially eliminating around 27 million jobs while creating 46 million new jobs across various sectors (Des et al. (2019). Routine and repetitive jobs, particularly those related to data processing and physical activities, are particularly vulnerable to being replaced by artificial intelligence and automation (Badet, 2021; Pyka, 2017). On the other hand, although robotic technology and artificial intelligence have progressed rapidly, machines still struggle to replace jobs that demand human skills, such as people management, strategic decision-making, and creativity (Morikawa, 2017). This has led many companies to implement automation and artificial intelligence to improve productivity and operational efficiency (Jimeno, 2019).

Along with the adoption of these technologies comes a growing need for non-technical skills that cannot be automated. The demands on job seekers in the Industry 4.0 era are not just limited to mastering technical skills (Baethge-Kinsky, 2020; Bongomin et al., 2020). Modern jobs demand more comprehensive skills, including knowledge, technical skills (hard skills), and soft skills (Apri Nuryanto et al., 2024; Areisy & Sudira, 2022). This condition causes employers to prefer not only technically skilled employees but also those who have good soft skills, such as communication skills,

teamwork, and problem-solving (Munir, 2021). Soft skills play an essential role in applying technical knowledge or skills in real workplace situations (Laker & Powell, 2011), thus making hard skills and soft skills two crucial skills for workers in the Industry 4.0 era (Saari et al., 2021).

Based on a survey conducted by the National Association of Colleges and Employers in 2018, soft skills, such as communication, leadership, and time management skills, are among the most critical attributes that workers should possess (National Association of Colleges and Employers, 2018). As soft skills are increasingly recognised as critical success factors in the world of work, vocational education plays a crucial role in preparing graduates to compete in a dynamic job market.

Vocational education in Indonesia, which aims to prepare work-ready graduates, faces significant challenges in adjusting its curriculum to suit industry needs (Febriana et al., 2023). Often, vocational education graduates experience a mismatch of skills with the needs of the world of work, which impacts the difficulty of obtaining jobs that match their competencies (Hoque et al., 2023). Data from the International Monetary Fund in 2022 showed that the unemployment rate in Indonesia reached 6%, reflecting the existence of a group of job seekers who do not have skills relevant to industry demands (International Monetary Fund, 2022). In this context, vocational education must respond to increasingly competitive labor markets by developing students' skills comprehensively, including both technical and non-technical competencies.

To address these challenges, vocational education must transform and adapt to the evolving demands of the workforce. One strategy is to integrate the development of soft skills into all teaching programs. Soft skills, such as critical thinking, adaptability, and professional ethics, must be taught theoretically and applied through practical activities to develop these skills in students. This integration can be achieved through project-based approaches, industry partnerships, and extracurricular activities that challenge students to step out of their comfort zones and learn to work in teams. This research examines the development of soft skills in several polytechnics in Indonesia, with a focus on the State Polytechnic of Bandung and the State Polytechnic of Malang. The case studies at these two institutions are expected to provide deeper insights into best practices that can be applied more broadly in vocational education. Thus, the results of this research will not only produce a relevant soft skills management model for polytechnics in Indonesia but can also significantly contribute to the development of higher education policies in the Industry 4.0 era.

METHOD

This study employed a survey to collect data. The survey employed in-depth interviews to gather rich, comprehensive information on the development of students' soft skills in polytechnics. Respondents in this study consisted of department heads, study program heads, and lecturers. The selection of these respondents is based on their strategic roles in managing and implementing learning programs at polytechnics, which enables them to provide relevant insights into the development of soft skills in a vocational higher education environment.

Data Collection Technique

In-depth interviews were conducted sequentially, where fundamental questions were prepared in advance. However, the interview still allowed the interviewer to explore topics that emerged during the discussion in greater depth. Semi-structured interviews enabled the researcher to gain a deeper understanding of the policies, programs, and challenges encountered in developing students' soft skills. In addition, data collection included documents on soft skills development policies and programs implemented in both polytechnics, as well as direct observation of relevant activities.

Population and Sample

The population in this study was polytechnic managers in Indonesia. The purposively selected samples comprised department heads, study program heads, and lecturers from the Mechanical Engineering Study Program at the State Polytechnic of Bandung and the State Polytechnic of Malang. The purposive sample was selected based on specific criteria: respondents' experience and

knowledge regarding the development of soft skills within their institutions. The focus on these two polytechnics was chosen to provide a particular and in-depth picture of the practice of soft skills development in vocational education.

Data Analysis Technique

Data analysis in this study employed a qualitative approach. The analysis process involved several stages. All interview data were recorded and then transcribed to obtain a complete text. The transcribed data were coded to identify emerging themes or categories. These codes were used to mark important passages relevant to the research topic. Based on the coding results, the data were grouped into broader themes. This stage aimed to identify patterns that could inform the interpretation of research results. After the data were organized by theme, the next step was to summarize and present the results of the analysis in a comprehensive narrative.

Data Validity

To ensure data validity, this research employed data triangulation. Triangulation was done by comparing interview data with policy documents and observation data. This approach aimed to enhance the accuracy and trustworthiness of the collected data by verifying information from multiple sources.

RESULTS AND DISCUSSION

Polytechnics are vocational higher education institutions that strongly focus on developing practical skills and an in-depth understanding of a specific field of work (Ma, 2006; Zhang, 2022). In the ever-changing modern era, it is not enough to have technical knowledge; the ability to adapt to change, communicate effectively, and work in teams has become essential in facing the challenges of the world of work (Prasetya et al., 2025). These skills, often referred to as "soft skills," are critical factors in the success of vocational education graduates. Therefore, establishing and developing soft skills among polytechnic students is crucial to ensure their readiness to meet the demands of dynamic work environments.

Soft skills development at the State Polytechnic of Bandung and the State Polytechnic of Malang is implemented through curricular and extracurricular activities within their educational programs. These efforts strengthen interpersonal, communication, leadership, critical thinking, and problem-solving skills. The soft skills development activities involve the following approaches:

Student Orientation

Developing student soft skills in polytechnics begins at the initial stage of new student orientation. This student orientation process plays a vital role in instilling and improving essential soft skills for students. Upon entering the campus environment, new students are introduced to the values and social norms of polytechnic institutions. This orientation aims to prepare students to be familiar with the intellectual and social environment they will face during the lecture period. More than just a ceremonial activity, orientation programs are specifically designed to be a means of developing soft skills that are essential for students' academic and professional success (Bârsan et al., 2019; Fears & Denke, 2019; Rodríguez Martínez et al., 2021).

The orientation program at Polytechnics focuses on developing students' potential in non-academic aspects to create an inclusive and conducive learning environment. Students can develop communication, teamwork, and leadership skills through interactive, collaborative activities. For example, the role simulation activities, group games, and collaborative projects held during orientation help students feel more comfortable in the campus environment and provide a foundation for developing their individual and vocational skills. These activities are designed to introduce students to real-life situations in which they must interact with peers and staff, adapt quickly, and solve problems creatively.

In addition, orientation also serves as a platform to introduce students to the fundamental principles and values of academic integrity, which are essential for their future success. In this

context, students are encouraged to develop a deep understanding of the importance of work ethics, social responsibility, and active participation in extracurricular activities. The orientation program emphasises aspects of academic discipline and instils social values such as tolerance, environmental awareness, and cross-cultural cooperation. Thus, orientation serves as a bridge connecting students with various activities and organisations on campus that can help them build social networks and practical skills.

Polytechnic orientation activities often include interactive activities designed to develop specific skills. For example, through team games or ice-breaking activities, students learn to communicate effectively, share ideas, and listen well. These activities also provide opportunities for students to hone their negotiation and conflict-resolution skills, which are essential components of workplace soft skills. The orientation program aims to introduce them to various communication styles and help them identify their strengths and weaknesses in interacting with others.

To prepare students to become future leaders who are not only experts in their academic fields but also highly ethical and socially responsible, student orientation at polytechnics includes discussions of ethical and integrity principles. Students are invited to discuss the importance of upholding ethical standards in every aspect of life, both on campus and in the community. The program often includes case studies that illustrate ethical dilemmas in the workplace, allowing students to practice making decisions by considering the social impact of their actions.

With a holistic approach, the orientation programs at the State Polytechnic of Bandung and the State Polytechnic of Malang aim to provide a strong foundation for students to develop essential soft skills. This program focuses on delivering academic content, fostering character development, and developing interpersonal skills and mental readiness to face the challenges of campus life and the professional world. This approach is expected to produce technically superior graduates who possess a mature, adaptive personality and can contribute positively to society.

Through this comprehensive orientation, students are expected to internalize the values taught and apply them in their daily lives, both on campus and in the future workplace.

Internal Soft Skills Training

After orientation, the next step is to provide intensive training in soft skills. Internal soft skills training is essential in developing students' non-technical skills. In this training, students are educated in various aspects, including effective communication, leadership, teamwork, creativity, problem-solving, and adaptability (Ismail et al., 2017; Muhammad et al., 2018). The training is organized through various activities, including seminars, workshops, and simulations of real-life situations, allowing students to practice facing challenges similar to those encountered in the workplace. With this training, students can develop non-technical skills that are essential requirements in today's workforce. Soft skills training is considered an integral part of polytechnic education and a critical element that helps students hone abilities needed beyond technical knowledge.

The advantage of internal soft skills training is that polytechnics can tailor it to the specific needs of their study programs. For example, students in engineering vocational programs may attend team problem-solving training that emphasises the importance of cooperation in completing complex engineering projects. This customised approach not only enhances general soft skills but also prepares students for specific challenges they may encounter in the workplace. By targeting training relevant to their field of study, polytechnics can ensure that their graduates possess a combination of technical and non-technical skills that are ready for application.

Internal soft skills training also enables polytechnics to foster an inclusive and supportive learning culture (Kuregyan & Khusainova, 2022). By providing direct guidance and ongoing support, lecturers can help students recognize their potential, set clear goals, and be motivated to achieve their personal and professional objectives. In this context, internal training is not merely formal learning but an investment in students' holistic development, encompassing academic, emotional, and social dimensions. Students are prepared not only to take exams in the classroom but also to navigate the dynamics and complexities of the workplace beyond the campus.

Furthermore, internal soft skills training strengthens students' critical and creative thinking. Students are encouraged to develop innovative and effective problem-solving approaches through activities such as project management simulations. This includes exercises that require them to think outside the box, evaluate alternative solutions, and make decisions based on data and analysis. Such activities also help build adaptability, as students are taught to respond quickly to changes, new situations, and emerging technologies.

With these strategies, internal soft skills training at polytechnics plays a crucial role in shaping graduates who are not only technically competent but also resilient and adaptive, and ready to face challenges in the dynamic world of work. This will help polytechnics produce graduates who can compete globally and contribute to society.

External Training

Training students' soft skills is one of the innovations made by higher education institutions, especially polytechnics. This training is not only limited to internal programs but also includes external training to prepare students to face the increasingly complex and dynamic needs of the labour market (Lapiņa & Ščeulovs, 2014; Rajan et al., 1997). These external training programs engage professionals outside the polytechnic environment to provide insight and in-depth knowledge of industry trends, job demands, and the specific skills required (Cacciolatti et al., 2017). This initiative is designed to bridge the gap between academic competencies and the evolving needs of the professional world. Through external training, students can deepen their interpersonal skills by getting hands-on guidance from experienced experts in the field.

The training organized by these professionals encompasses a wide range of essential skills, including leadership, effective communication, collaboration, problem-solving, and time management. Various activities, such as seminars, workshops, and hands-on training, facilitate the transfer of knowledge and skills that are more practical and relevant to actual workplace conditions. This training not only aims to teach theories or concepts but also emphasises practical application, where students are trained to face realistic and complex challenges in the world of work (Rani, 2010).

External training programs have a significant impact on students and the polytechnic as a whole. For students, it offers opportunities to develop in-depth communication, leadership, and problem-solving skills that can be directly applied in a professional setting. By learning from experienced professionals, students can create a broader perspective on best practices and prevailing industry standards. This helps them better understand workplace expectations and enhances their readiness to enter the workforce after graduation.

On the other hand, polytechnics also benefit from this program. The high rate of graduate employment and alumni career success confer a positive reputation on the institution. By equipping graduates with relevant, in-demand skills for the workforce, polytechnics can strengthen their position in the higher education landscape and attract new students. These external training programs can also expand the network of cooperation between polytechnics and industry, creating opportunities for internships, collaborative research, and practicum projects aligned with students' fields of study.

External training programs employ diverse approaches to enhance the effectiveness of soft skills development. One approach is to simulate an industry case study, in which students are asked to solve a specific problem within a specified time limit. This simulation allows students to hone their critical thinking skills, work in teams, and make quick decisions (Mahdi et al., 2020). In addition, communication training can include public presentation exercises that help students convey ideas clearly and persuasively and receive feedback for self-improvement.

Leadership training also plays a crucial role by enabling students to practice leading small projects or group activities. With the support of professional mentors, students can learn how to manage a team, set goals, and motivate team members to achieve desired results. This training develops leadership skills and teaches them how to build professional relationships and handle conflict constructively (Obligado et al., 2023).

External training provides a platform that not only facilitates the development of professional skills but also supports students' personal growth. Through interactions with professionals, students learn about technical skills and gain insight into the values, work ethics, and social responsibilities

that are important in professional life. This experience helps students recognize their potential and inspires them to set ambitious yet realistic career goals.

Additionally, external training can encourage students to take initiative and adapt to new situations with confidence. For example, when faced with unexpected scenarios in training simulations, students are trained to remain calm and find solutions quickly. This ability becomes especially valuable in an ever-changing workplace, where employees are expected to navigate uncertainty and adapt to new technologies or methods.

Through external training programs, polytechnics can continue to enhance their relevance and adaptability in response to evolving demands. This program prepares not only students to become competent professionals but also individuals ready to face global challenges. With an integrated training approach, polytechnics serve as facilitators, equipping students with the skills needed in the world of work and everyday life, thereby better preparing them to become future leaders.

Curriculum

The State Polytechnic of Bandung and the State Polytechnic of Malang have designed curricula that integrate elements of soft skills development. This curriculum includes both required and elective courses that focus on communication, time management, work ethics, and interpersonal skills. This course is designed to ensure that students acquire technical knowledge and participate in academic activities that help them develop the soft skills relevant to their field of study. The importance of soft skills in the workplace has influenced curriculum design in polytechnics, emphasizing the development of skills necessary for success in a competitive work environment. A well-designed curriculum encompasses a range of courses and activities that foster the comprehensive development of both hard and soft skills.

Apart from courses that focus on practice, polytechnics also teach theoretical courses that support the development of soft skills (Kuregyan & Khusainova, 2022). This course provides a theoretical foundation for developing effective communication, leadership, and management skills, enabling students to understand the fundamental concepts of these skills and apply them in practical situations (Carter, 2011; Rani, 2010). This approach integrates theory and practice, enabling students to understand the concepts underlying the skills they develop and apply across contexts, including group projects, presentations, and real-world simulations.

One of the essential components in developing soft skills at polytechnics is practical activities and industrial internships. This activity allows students to apply the knowledge and skills learned in class in a natural work environment (Nazarova & Gryazeva, 2021). Industrial internships, in particular, provide valuable hands-on experience where students can learn to work in teams, communicate with colleagues and superiors, and manage projects (Karunaratne & Perera, 2019; Losekoot et al., 2018). Additionally, industry practice helps students understand work ethic, organizational culture, and professional expectations applicable in the industry.

Industrial internships are not merely about fulfilling curriculum requirements; they also provide opportunities to develop problem-solving, adaptability, and leadership skills in a more complex context. For example, students placed in manufacturing companies may be involved in production process improvement projects that require collaborating across departments and applying an analytical approach to problem-solving. Involvement in these real-world projects enables students to assess their strengths and weaknesses and learn from hands-on experience in a dynamic environment.

Project-based learning is another method that can be integrated into the curriculum to support the development of soft skills (Dogara et al., 2020; Sutopo, Setiadi, Nashir, et al., 2024). In this method, students are assigned real-world projects that require collaboration, problem-solving, and critical thinking (Putri et al., 2021; Sutopo et al., 2024; Rahman et al., 2023). For example, multidisciplinary projects across several courses may require students to work in cross-disciplinary teams, enabling them to learn to manage conflict, divide tasks, and solve problems collaboratively. By participating in realistic, problem-based projects, students gain practical experience relevant to the workplace.

Such projects may include collaboration with industry or local governments to solve regional issues, such as improving transportation systems, developing environmentally friendly products, or designing technology solutions for MSMEs. This experience enhances students' technical, communication, and negotiation skills when working with clients or external stakeholders.

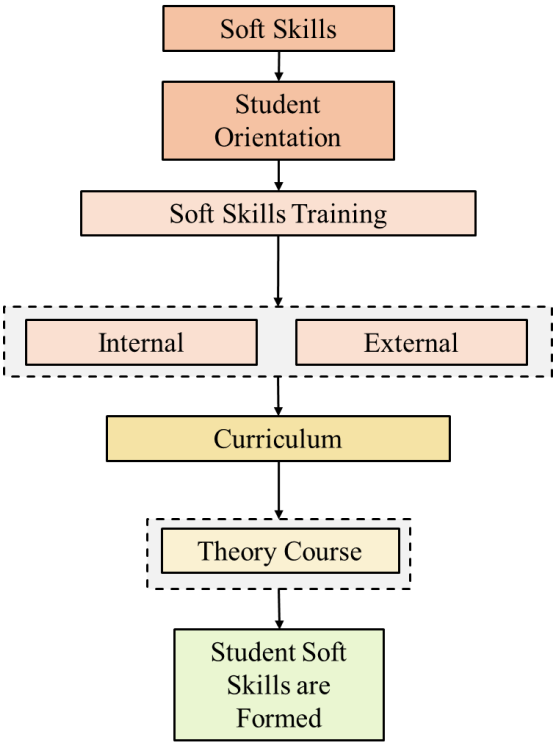

Figure 1. Soft Skills Development in Polytechnics

To improve students' soft skills, the holistic approach implemented by the Polytechnic is crucial in ensuring that students not only possess strong knowledge in their field of study but also develop essential soft skills that are highly valued in the workplace. The process of forming soft skills is designed to help students become more competent individuals, ready to face various challenges in the world of work and make positive contributions to multiple aspects of society (Abdullah-Al-Mamun, 2012; Pramudia et al., 2019). This approach emphasizes the importance of interpersonal skills, critical thinking, and collaboration as essential alongside academic achievement, thereby producing graduates who are both challenging and adaptable in this dynamic era. Through a strategically designed curriculum and interactive learning experiences, Polytechnic is committed to equipping students with comprehensive skills that will maximise their potential in the future..

CONCLUSION

Developing students' soft skills at the State Polytechnic of Bandung and the State Polytechnic of Malang is a holistic process that involves orientation, internal, and external training. Orientation introduces students to the institution's values and culture. At the same time, intensive training in communication, leadership, teamwork, creativity, and adaptability prepares them for workplace challenges. Participation in internships, volunteer programs, and competitions provides valuable practical experience. Polytechnic curricula are carefully designed to include theoretical courses that support the development of soft skills, thereby making these skills integral to vocational education. Investment in the development of soft skills equips students to adapt and contribute positively to society. With this comprehensive approach, polytechnics have produced graduates who are not only technically competent but also possess superior character. This study has significant implications for the development of vocational education curricula in Indonesia, as it demonstrates that integrating

soft skills can enhance graduates' job-market readiness. However, this study also has limitations, including its focus on two polytechnics, which limits the generalizability of the results. Future research should involve more institutions and conduct longitudinal studies to assess the long-term impact of soft skills development on graduates' career success.

REFERENCES

Abdullah-Al-Mamun, M. (2012). The soft skills education for the vocational graduate: Value as work readiness skills. *British Journal of Education, Society & Behavioural Science, 2*(4), 326–338. https://doi.org/10.9734/BJESBS/2012/1858

Areisy, H. J., & Sudira, P. (2022). Employability skills of state vocational high school students on welding engineering expertise competency. *Jurnal Pendidikan Vokasi, 12*(1), 53–63. https://doi.org/10.21831/jpv.v12i1.41764

Badet, J. (2021). AI, automation and new jobs. *Open Journal of Business and Management, 9*(5), 2452–2463. https://doi.org/10.4236/ojbm.2021.95132

Baethge-Kinsky, V. (2020). Digitized industrial work: Requirements, opportunities, and problems of competence development. *Frontiers in Sociology, 5*, Article 33. https://doi.org/10.3389/fsoc.2020.00033

Bârsan, R. M., Rotaru, M., & Bârsan, V.-A. (2019). Orientation programs in higher education: Civil duty and a way to improve employability? *Journal Plus Education, 24*, 175–184. https://www.ceeol.com/search/article-detail?id=778120

Bongomin, O., Ocen, G. O., Nganyi, E. O., Musinguzi, A., & Omara, T. (2020). Exponential disruptive technologies and the required skills of Industry 4.0. *Journal of Engineering, 2020*, 1–22. https://doi.org/10.1155/2020/4280156

Cacciolatti, L., Lee, S. H., & Molinero, C. M. (2017). Clashing institutional interests in skills between government and industry: An analysis of demand for technical and soft skills of graduates in the UK. *Technological Forecasting and Social Change, 119*, 139–153. https://doi.org/10.1016/j.techfore.2017.03.024

Carter, L. (2011). Ideas for adding soft skills education to service learning and capstone courses for computer science students. In *Proceedings of the 42nd ACM Technical Symposium on Computer Science Education* (pp. 517–522). https://doi.org/10.1145/1953163.1953312

Das, K., Wibowo, P., Chui, M., Agarwal, V., & Lath, V. (2019). *Automation and the future of work in Indonesia.* McKinsey & Company. https://www.mckinsey.com/~/media/mckinsey/featured%20insights/asia%20pacific/automation%20and%20the%20future%20of%20work%20in%20indonesia/automation-and-the-future-of-work-in-indonesia-vf.pdf

Dogara, G., Saud, M. S. B., Kamin, Y. B., & Nordin, M. S. B. (2020). Project-based learning conceptual framework for integrating soft skills among students of technical colleges. *IEEE Access, 8*, 83718–83727. https://doi.org/10.1109/ACCESS.2020.2992092

Fears, G., & Denke, M. S. (2019). Wilderness pursuit programs. *Journal of College Orientation, Transition, and Retention, 9*(1). https://doi.org/10.24926/jcotr.v9i1.2533

Febriana, R., Hanafi, I., & Kandriasari, A. (2023). Employability skills and self-perception of diploma 3 graduates in the world of work. *Jurnal Pendidikan Vokasi, 13*(2), 112–122. https://doi.org/10.21831/jpv.v13i2.54039

Hoque, N., Uddin, M., Ahmad, A., Mamun, A., Uddin, M. N., Chowdhury, R. A., & Alam, A. H. M. N. (2023). The desired employability skills and work readiness of graduates: Evidence from

the perspective of established and well-known employers of an emerging economy. *Industry and Higher Education*. https://doi.org/10.1177/09504222221149850

International Monetary Fund. (2022). *Unemployment rate*. https://www.imf.org/external/datamapper/LUR@WEO/VNM/THA/SGP/PHL/MYS/IDN

Ismail, I., Ahmad, A. R., & Awang, M. M. (2017). A study of soft skills among polytechnic students. *Open Journal of Social Sciences, 5*(8), 295–311. https://doi.org/10.4236/jss.2017.58025

Jimeno, J. F. (2019). Fewer babies and more robots: Economic growth in a new era of demographic and technological changes. *SERIEs, 10*(2), 93–114. https://doi.org/10.1007/s13209-019-0190-z

Karunaratne, K., & Perera, N. (2019). Students' perception on the effectiveness of industrial internship programme. *Education Quarterly Reviews, 2*(4). https://doi.org/10.31014/aior.1993.02.04.109

Kuregyan, A. L., & Khusainova, M. A. (2022). Soft skills as key competences for successful employability of graduate students. *Vestnik of Samara State Technical University Psychological and Pedagogical Sciences, 19*(4), 113–120. https://doi.org/10.17673/vsgtu-pps.2022.4.9

Laker, D. R., & Powell, J. L. (2011). The differences between hard and soft skills and their relative impact on training transfer. *Human Resource Development Quarterly, 22*(1), 111–122. https://doi.org/10.1002/hrdq.20063

Lapiņa, I., & Ščeulovs, D. (2014). Employability and skills anticipation: Competences and market demands. *Procedia – Social and Behavioral Sciences, 156*, 404–408. https://doi.org/10.1016/j.sbspro.2014.11.211

Losekoot, E., Lasten, E., Lawson, A., & Chen, B. (2018). The development of soft skills during internships: The hospitality student's voice. *Research in Hospitality Management, 8*(2), 155–159. https://doi.org/10.1080/22243534.2018.1553386

Mahdi, O. R., Nassar, I. A., & Almuslamani, H. A. (2020). The role of using case studies method in improving students' critical thinking skills in higher education. *International Journal of Higher Education, 9*(2), 297. https://doi.org/10.5430/ijhe.v9n2p297

Martínez, A. R., Sánchez, V. S., Linares, C. F., & Cosculluela, C. L. (2021). Key soft skills in the orientation process and level of employability. *Sustainability, 13*(6), 3554. https://doi.org/10.3390/su13063554

Muhammad, A., Ariyani, E., & Sadikin, S. (2018). Soft skills of polytechnic students in Indonesia based on comparative analysis data according to the needs of higher education and workplace. *International Journal of Environmental and Science Education*. http://www.ijese.net/makale_indir/IJESE_2062_article_5b6b67d272bf5.pdf

Munir, F. (2021). More than technical experts: Engineering professionals' perspectives on the role of soft skills in their practice. *Industry and Higher Education*. https://doi.org/10.1177/09504222211034725

National Association of Colleges and Employers. (2018). *The key attributes employers seek on students' resumes*. https://www.naceweb.org/about-us/press/2017/the-key-attributes-employers-seek-on-students-resumes/

Nazarova, L. I., & Gryazeva, S. A. (2021). Organization of practical training of polytechnic college students. *Agricultural Engineering, 1*, 69–76. https://doi.org/10.26897/2687-1149-2021-1-69-76

Nuryanto, A., Prasetya, T. A., & Harjanto, C. T. (2024). *Soft skills pada pendidikan vokasional: Panduan praktis untuk mengembangkan mahasiswa siap kerja*. UNY Press.

Pramudia, J. R., Ardiwinata, J. S., Sudiapermana, E., & Hilmi, M. I. (2019). The soft skill training to improve the readiness of alumni in entering the working world. In *Proceedings of the 2nd International Conference on Educational Sciences (ICES 2018)*. https://doi.org/10.2991/ices-18.2019.26

Prasetya, T. A., Munadi, S., Sukardi, T., & Setiyawan, A. (2025). Essential soft skills for engineering in Industry 4.0: A systematic literature review. *International Journal of Engineering Education, 41*(5), 1376–1385.

Putri, R. K., Bukit, N., & Simanjuntak, M. P. (2021). The effect of project-based learning models on critical thinking, creative thinking, collaboration, and communication skills (4C) in physics. https://doi.org/10.2991/assehr.k.211110.103

Pyka, A. (2017). Dedicated innovation systems to support the transformation towards sustainability. *Journal of Open Innovation: Technology, Market, and Complexity, 3*(4), 1–18. https://doi.org/10.1186/s40852-017-0079-7

Rahman, T., Fitria, N., Nurhidayah, E., & Yuliandani, I. (2023). Effects of project-based learning on employability skills. *Review of Islamic Studies, 2*(1), 1–10. https://doi.org/10.35316/ris.v2i1.473

Rani, S. (2010). Need and importance of soft skills in students. *Journal of Literature, Culture and Media Studies, 2*.

Saari, A., Rasul, M. S., Yasin, R. M., Rauf, A. A., Hilmi, Z., Ashari, M., & Pranita, D. (2021). Skills sets for workforce in the 4th industrial revolution. *Journal of Technical Education and Training, 13*(2), 1–9. https://doi.org/10.30880/jtet.2021.13.02.001

Sutopo, S., Setiadi, B. R., Prasetya, T. A., Harjanto, C. T., Sasongko, B. T., & Saputri, V. H. L. (2024). Peer-project-based learning in CNC simulation programming courses. *TEM Journal, 13*(4), 3079–3085. https://doi.org/10.18421/TEM134-42

Sutopo, S., Setiadi, B. R., Nashir, I. M., Lutviana, V. H., Saputri, V. H. L., Arifin, A., Prasetya, T. A., & Harjanto, C. T. (2024). Enhancing students' self-efficacy and creativity in CNC machining through peer-assisted project-based learning. *Jurnal Pendidikan Vokasi, 14*(2), 232–243. https://doi.org/10.21831/jpv.v14i2.72409

Zhang, M. (2022). Research on the current situation and countermeasures of labor education in higher vocational colleges in the new era. *Frontiers in Humanities and Social Sciences, 2*(11), 256–260. https://doi.org/10.54691/fhss.v2i11.2815